P78-10087

NASA News

National Aeronautics and
Space Administration

Washington, D.C. 20546
AC 202 755-8370

For Release:

IMMEDIATE

Bill O'Donnell
Headquarters, Washington, D.C.
(Phone: 202/755-0816)

Charles Redmond
Johnson Space Center, Houston, Texas
(Phone: 713/483-5111)

RELEASE NO: 78-88

NOTE TO EDITORS:

This is a summary of recent activities to extend the orbital life of Skylab.

NASA has successfully placed America's 77,111-kilogram (85-ton), 36-meter (118-foot) long space station, Skylab, in an orbital position which hopefully will give it a "new lease on life."

A team of engineers and controllers from the Johnson Space Center, Houston, Texas; Marshall Space Flight Center, Huntsville, Ala.; IBM and three tracking stations -- Bermuda; Madrid, Spain; and Goldstone, Calif. -- have completed a four-month plan of scheduled events to stabilize and trim the orbital position of Skylab.

-more-

Mailed:

N78-75887 78

(NASA-News-Release-78-88) A SUMMARY OF RECENT ACTIVITIES TO EXTEND THE ORBITAL LIFE OF SKYLAB (National Aeronautics and Space Administration) 4 p

Unclas

00/13 22363

Maneuvers which began Friday, June 8, and ended Sunday, June 11, placed the space station in an attitude which reduces the atmospheric drag on the vehicle at its orbital height of 389 kilometers (242 statute miles).

Assuming continued functioning of the gyros, this new attitude is hoped to extend by six to 12 months the orbital lifetime of Skylab -- to late 1979 or early 1980. This should give NASA additional time to possibly implement a plan it is considering with an early Space Shuttle test flight to carry out a Skylab reboost into higher orbit or controlled deorbit for maximum safety into a remote ocean area.

The weekend maneuvers climaxed activities that began last March when engineers and flight controllers at the Bermuda tracking station began checking out various Skylab systems which would be used and bringing Skylab's batteries to a fully-charged state.

On Thursday, June 8, flight controllers turned on the dormant control moment gyros (CMGs) which make up a portion of the Skylab attitude control system used to maneuver the space station into a position and hold it. The other part of the system is the thruster attitude control system (TACS) which expels nitrogen gas through nozzles to move Skylab into various attitudes as it orbits Earth.

Both systems are controlled by a computer which has various sensors to indicate position.

Two of the gyros were activated and worked as expected. A third gyro failed during the last Skylab manned mission in 1974 and is not being used.

On June 9, Skylab was commanded into a solar inertial attitude (in which the spacecraft solar cells always face the Sun) using the TACS and stayed in that position under CMG control. However, a spurious signal from an onboard switch selector during subsequent commanding caused Skylab to move from this position. The vehicle automatically switched control to the TACS. On the next orbit, the vehicle was returned to solar inertial and placed under CMG control. For this reason, engineers decided to delay the final maneuver to the low-drag attitude for a day so that Marshall engineers could perform simulations to understand the problem and hopefully prevent it from recurring.

Early Sunday, June 11, Skylab was maneuvered into its desired "end-on-velocity-vector" attitude in which the docking port is forward and its long axis is parallel to the ground and along the flight path.

It remains in this position with its TACS inhibited and engineers are continuing to monitor Skylab and to periodically transmit minor corrections to the onboard computer which is maintaining the position.

Skylab was launched May 15, 1973, and was manned during three missions by three different astronaut crews. The last crew departed Skylab Feb. 8, 1974, at an altitude of 445 km (276 statute mi.). Skylab presently is 389 km (242 statute mi.) above Earth.

At the time the final crew departed, NASA estimated that the orbiting workshop would remain in space until 1983 permitting ample opportunities to reach it on Space Shuttle missions. However, since that time the orbit has decreased at a higher-than-anticipated rate. Contributing to the more rapid rate of descent is an increase in atmospheric drag caused by heavier sunspot activity than had originally been predicted.

-end-